COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	1st Cycle (UNDERGRADUATE)		
COURSE CODE	**6023**	**SEMESTER**	**4th**
COURSE TITLE	**LINEAR MODELS**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
	4	8

COURSE TYPE	Core - Scientific Field
PREREQUISITE COURSES:	6012 ESTIMATION AND HYPOTHESIS TESTING
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://www.dept.aueb.gr/en/stat-courses

(2) LEARNING OUTCOMES

Learning outcomes
Upon completion of the course, students will be able to handle issues related to: correlation coefficient, bivariate and multivariate normal distribution, simple and multiple linear regression, inference in linear regression, hypothesis testing & diagnostics, transformations, general linear model , algorithmic methods of selecting "best" (sub) model multicollinearity and dummy variables.
General Competences
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Production of free, creative and inductive thinking

(3) SYLLABUS

The purpose of this course is to introduce students to the theory of linear regression and especially to the "correct" implementation. The topics covered include: relationships between continuous variables - correlation coefficient. The bivariate normal distribution. Simple linear regression: statistical inference, prediction, hypothesis testing and diagnostics.

Transformations and general linear model. Analysis of variance for model selection. Multiple linear regression using matrices. Added variable plots. Selecting "best" (sub)model, generalized F-test. Algorithmic procedures for selecting "best" (sub)model, multicollinearity and dummie variables.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to Face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	YES
TEACHING METHODS	

Activity	*Semester workload*
Lectures	120
tutorials	40
student's study	40
Course total	***200***

STUDENT PERFORMANCE EVALUATION	WRITTEN EXAMINATION AT THE END OF THE SEMESTER

(5) ATTACHED BIBLIOGRAPHY

- *Κούτρας, Μ. Και Ευαγγελάρας, Χ. (2010). Ανάλυση Παλινδρόμησης: Θεωρία και Εφαρμογές, Σταμούλης*
- *Δ. Στογιάννης, Φ. Σιάννης (2024). Ανάλυση Παλινδρόμησης, Εκδόσεις Παπαζήση, ISBN: 978-960-02-4218-8*
- *Draper N.R. and Smith, H. (1997). Εφαρμοσμένη Ανάλυση Παλινδρόμησης, Παπαζήσης*
- *Montgomery, D.C., Peck, E.A. and Vining, G.G. (2012). Introduction to Linear Regression Analysis, Wiley.*
- *Weisberg, S. (2014). Applied Linear Regression, Wiley*